GENERAL EXAMPLE
SYSTEM OPERATION
AUTOMATIC MODE

The following is a description of system operation in Automatic Mode. In this example it is assumed that Tanks A and B are empty.

STEP 1 After a 5-minute delay with line pressure at Tank A below 1 psig, the Tank A Fill Valve opens and the blower and feeder motors are energized and transfer of dust proceeds from the Bin to Tank A. When Tank A is full, the blower and feeder motors are de-energized and the Fill Valve closes.

STEP 2 After another 5-minute delay with line pressure at Tank B below 1 psig, the Tank B Fill Valve opens and the Send Dust Signal is sent upline from Station B control panel to the Bin/Tank A panel.

STEP 3 The Line Check sequence begins. The Tank A compressor is energized; the Tank A Clean-Out Valve opens for 5 seconds; the Discharge Valve then opens, and a 5-minute timer starts timing. If Tank A line pressure exceeds

25 psig during this time period, the compressor is de-energized and the "Line Plugged" panel light turns on.

If pressure does not exceed 20 psig during this 5-minute period, then the Close Line signal is sent to the Midline panel. This causes the Tank B Fill Valve to close and starts a 10-minute timer. Tank A line pressure should then increase above 25 psig. If it does not do so, then the compressor is de-energized and the "Line Break" light turns on.

If pressure does increase above 25 psig, then the "Line OK" panel light turns on and the Tank B Fill Valve re-opens. Tank A line pressure is allowed to drop again before closing the Blowdown Valve.

STEP 4 Dust transfer begins. As the transfer line fills, Tank A line pressure again increases to above 30 psig. If pressure does not increase during an allotted 10-minute time period, then a Recycle sequence is initiated in which the Clean-Out and Blowdown Valves are cycled up to three times for 15 and 60 seconds, respectively. If pressure fails to increase during the Recycle sequence, then the "Line Break" and "Fault" panel lights turn on and the system shuts down.

If pressure does increase above 30 psi during the original 10-minute period or during the recycle periods, the dust transfer continues.

STEP 5 The 5-minute average dust flowrate is recorded and continually updated every 30 seconds both for dust leaving Tank A and for dust being added to Tank B. If both average flowrates are above a minimum value, then the "Rate OK" panel light on the upstream control panel turns on and dust transfer continues until Tank B is filled.

If the Tank A "Rate OK" signal is lost, the "Fault" light turns on; the Clean-Out Valve is cycled for 10 seconds; and the Blowdown Valve is opened for 5 minutes. If the "Rate OK" signal does not return after an additional 5 minutes, the system shuts down.

If the downline Tank B signal is lost, the "Fault" light turns on. If the signal fails to return for 5 minutes, then the system shuts down.

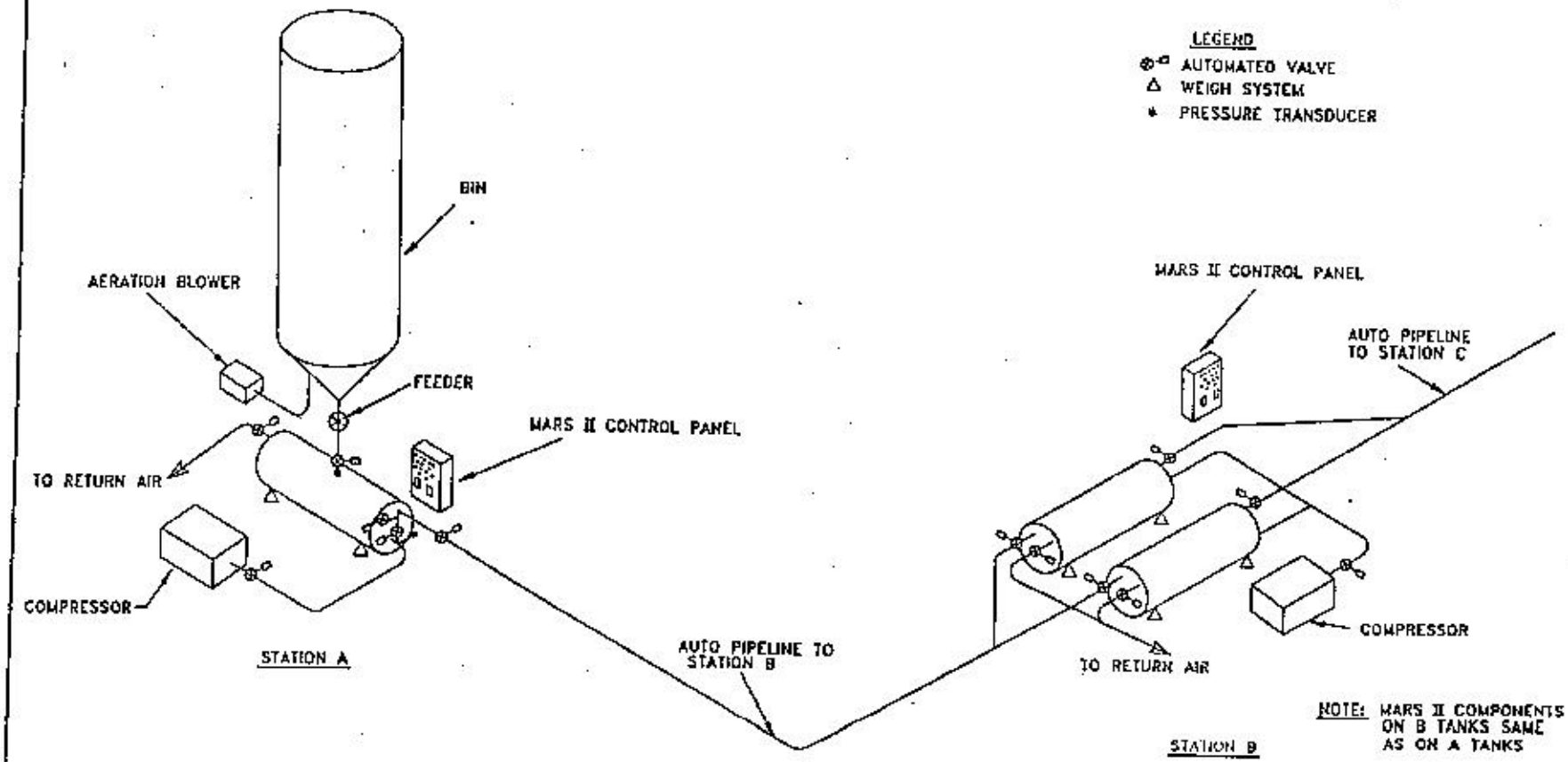
STEP 6 When Tank B is full or if Tank A is empty, or if a transfer "Rate OK" signal is lost beyond recall, then a

Shutdown sequence is initiated as follows. The Blowdown Valve is opened. Then, when Tank A line pressure drops below a fixed value, the compressor is de-energized and the Discharge Valve is closed. After 20 seconds, the Transfer Mode Unlock occurs.

STEP 7 The Transfer Mode Unlock releases the latches which were set at various stages of the line test sequence and during dust transfer.

STEP 8 When Tank B is full, a 15-minute timer is started. During this time the dust remaining in the line is tranferred to Tank B (since the Blowdown Valve is now open). At the end of the 15-minute period, the Tank B Fill Valve closes.

STEP 9 If Tank A becomes empty at any time, the Fill sequence repeats as described in Step 1. Transfer to Tank B will then resume until it is full. If a Send Dust signal is received from the next downline station (Tank C), then dust transfer will commence immediately from Tank B if it is full. Transfer of dust into or out of an Endline station tank may be accomplished in Manual Mode only.



TOLERANCES (EXCEPT AS NOTED)	REVISIONS		
DECIMAL + −	NO.	DATE	BY
FRACTIONAL + −	1		
ANGULAR + −	2		
	3		
	4		
	5		

A. L. LEE
304/934-5361
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MARS II STANDARD DUAL TANK ARRANGMENT

DRAWN BY RI	SCALE FULL	MATERIAL	
CHK'D	DATE 10/22/98	DRAWING NO.	
CODE 57	APP'D	S500006A	

MANUAL MODE

In Manual Mode the tank fill and dust transfer operations are accomplished by the operator directly from the control panel.

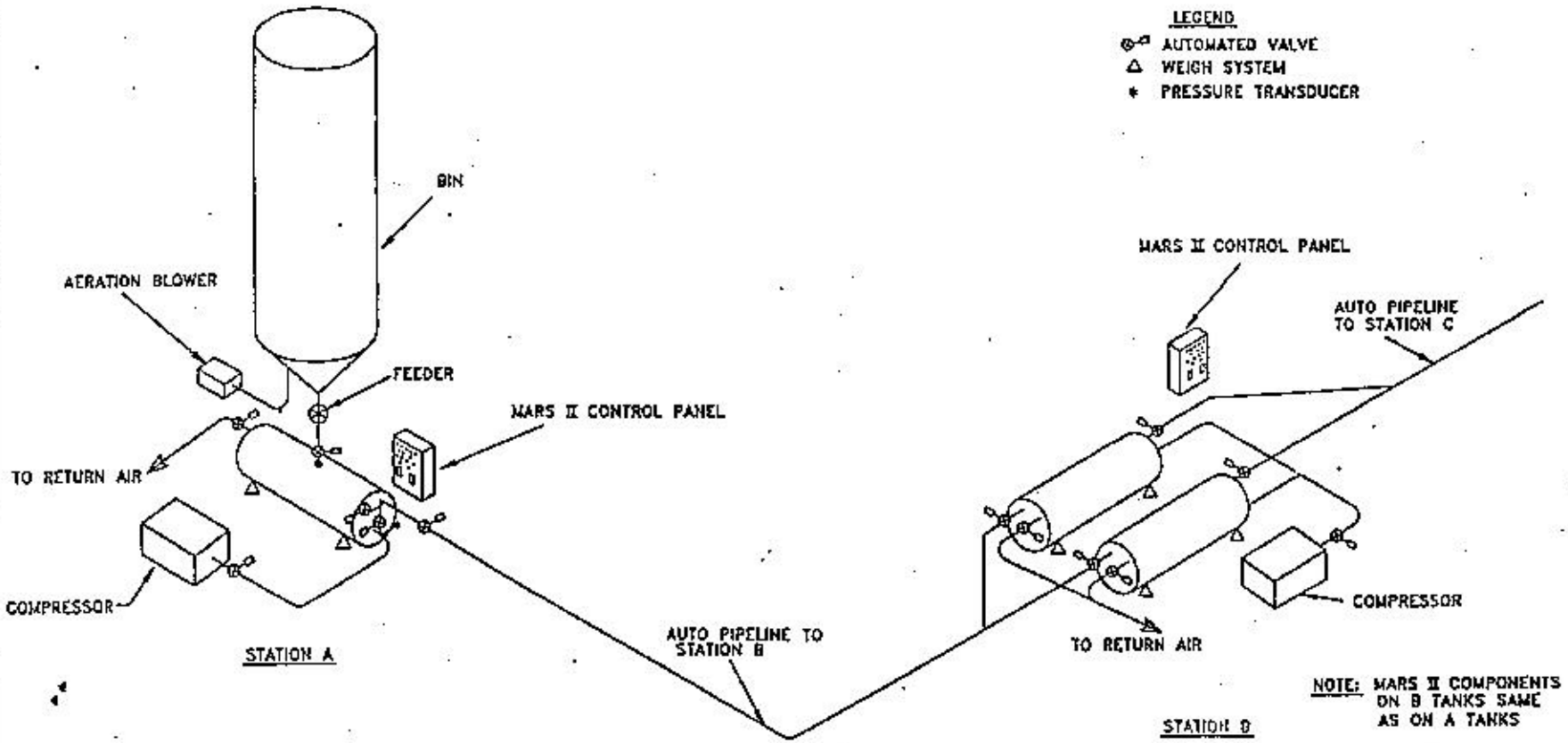
FILL: When the "Auto/Manual" switch of the BIN-TANK A control panel is in its "Manual" position and the "Transfer/Fill" switch is in its "Fill" position and if line pressure at Tank A is below 1 psig and if Tank A is not full, then Tank A Fill Valve will open and the blower and feeder motors will be energized. Thus, transfer of dust will proceed from the Bin to Tank A.

When one "Auto/Manual" switch of a MIDLINE control panel is in its "Manual" position and the corresponding "Transfer/Fill" switch is in its "Fill" position and if line pressure does not exceed 1 psig and if that tank is not full, then the Tank Fill Valve will open and the Send Dust Signal will be sent to the upline panel. Transfer of dust will proceed if transfer conditions are met at the upline station.

TRANSFER: The Manual Transfer sequence begins when the "Auto/Manual" switch is in "Manual" position and the

"Transfer/ Fill" switch is in its "Transfer" position and if the tank is not empty. The transfer sequence starts by energizing the compressor; briefly opening the Clean-Out Valve and closing the Blow-Down Valve. For the second tank in a Midline station, the Tank Select Valve is also opened.

PLUG REMOVAL: If the "Line Unplug" pushbutton on the face of the control panel is depressed while in "Manual" mode, the system will go through a single cycle of the Plug Removal sequence. In this cycle the Discharge Valve is closed; then the Plug Removal Valve is opened for 30 seconds and reclosed. The Discharge Valve is then reopened.



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